



**PATENT** Attorney Docket No. LEX-002C1

#### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS:

Gillies et al.

SERIAL NO.:

10/005,212

**GROUP NO.:** 

1646

FILING DATE:

December 4, 2001

**EXAMINER:** 

P. M. Mertz

TITLE:

HETERODIMERIC FUSION PROTEINS USEFUL FOR TARGETED IMMUNE

THERAPY AND GENERAL IMMUNE STIMULATION

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

#### SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. Copies of the patents and publications are enclosed.

#### REMARKS

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request continued examination under 37 C.F.R. 1.114; or  (2) after the period defined in (1) but before the mailing date of a final action or a rof allowance under 37 C.F.R. 1.311, and	04 HLE333	00000095 100	
continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) m of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request continued examination under 37 C.F.R. 1.114; or  (2) after the period defined in (1) but before the mailing date of a final action or a result of the date of the			the requisite Statement is below, <b>OR</b>
continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) m of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request	$\boxtimes$	(2)	after the period defined in (1) but before the mailing date of a final action or a notice of allowance under 37 C.F.R. 1.311, and
		(1)	continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the date of entry of the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the first Office action on the merits, or before the mailing of a first Office action after the filing of a request for

03/11/20

01 FC:1806

180.00 OP

Second Supplemental Information Disclosure Statement Atty Docket No. LEX-002C1 Serial No. 10/005,212 Page 2 of 2

		the requisite fee under 37 C.F.R. 1.17(p), namely \$180.00, is included herein, or
·	(3)	after the mailing date of a final action or notice of allowance but before the payment of the issue fee, AND
		the requisite Statement is below, AND
		the requisite petition fee under 37 C.F.R. 1.17(p), namely \$180.00 is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

Applicants believe no additional fee is required for entry and consideration of this paper. If an additional fee is required, please charge Deposit Account 20-0531.

Date: March 8, 2004 Reg. No. 48,645

Tel. No.: (617) 248-7697

Fax No.: (617) 248-7100

3030405\_1

Respectfully submitted,

Brian A. Fairchild, Ph.D. Attorney for Applicants

Testa, Hurwitz & Thibeault, LLP

125 High Street

Boston, Massachusetts 02110





### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S):

Gillies et al.

SERIAL NO.:

10/005,212

**GROUP NO.:** 

1646

FILING DATE:

December 4, 2001

**EXAMINER:** 

P.M. Mertz

TITLE:

HETERODIMERIC FUSION PROTEINS USEFUL FOR TARGETED IMMUNE THERAPY AND GENERAL IMMUNE STIMULATION

## CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8

I hereby certify that this correspondence, and any document(s) referred to as enclosed herein, is/are being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450 on this 8th day of March, 2004.

Anna-Karin Kuliga

Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450

#### Attached hereto is/are:

- 1. Transmittal Form (1 page);
- 2. Fee Transmittal (1 page);
- 3. A check in the amount of \$180.00;
- 4. Second Supplemental Information Disclosure Statement (2 pages);
- 5. Form PTO-1449 (7 pages);
- 6. Copies of cited references (A60-95, B88-B106, and C170-C238); and
- 7. A return receipt postcard.

3030413



RM PTO - 1449

# SECOND SUPPLEMENTAL INFORMATION SCLOSURE STATEMENT

ATTORNEY DOCKET NO.: LEX-002C1

APPLICANT(S): Gillies et al.

SERIAL NO.: 10/005,212

2C1 RECEIVED
MAR 1 2 2004 FILING DATE: December 4, 2001

_						
1	- 1	C	D A	TENIT	DOCI	IMENTS
ı	. ,		F A	1 17.13	1 // // .1	HVIENNIN

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	A60	4,703,008	10/27/87	Lin			
	A61	5,441,868	8/15/95	Lin			
	A62	5,547,933	8/20/96	Lin			
	A63	5,618,698	4/8/97	Lin			
	A64	5,624,821	4/29/97	Winter et al.			
	A65	5,679,543	10/21/97	Lawlis			
	A66	5,688,679	11/18/97	Powell			
	A67	5,756,349	5/26/98	Lin			
	A68	5,856,298	1/5/99	Strickland			
	A69	5,888,772	3/30/99	Okasinski et al.			
	A70	5,955,422	9/21/99	Lin			
	A71	6,231,536	5/15/01	Lentz			
	A72	6,284,536	9/4/01	Morrison et al.			
	A73	6,335,176	1/1/02	Inglese et al.			
	A74	6,340,742	1/22/02	Burg et al.			
	A75	6,444,792	9/3/02	Gray et al.			
	A76	6,475,717	11/5/02	Enssle et al.			
	A77	6,485,726	11/26/02	Blumberg et al.			
	A78	6,506,405	1/14/03	Desai et al.			
	A79	6,583,272	6/24/03	Bailon			
	A80	6,586,398	7/1/03	Kinstler et al.			
	A81	6,617,135	9/9/03	Gillies et al.			
	A82	2001/0053539	12/20/01	Lauffer et al.			
	A83	2002/0081664	6/27/02	Lo et al.			
	A84	2002/0142374	10/3/02	Gallo et al.			
	A85	2002/0147311	10/10/02	Gillies et al.			
	A86	2002/0192222	12/19/02	Blumberg et al.			
	A87	2002/0193570	12/19/02	Gillies et al.			

FΩ	DM	PTO -	1449
T 2 4		F 1 ( ) -	

# SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: LEX-002C1

APPLICANT(S): Gillies et al.

SERIAL NO.: 10/005,212

FILING DATE: December 4, 2001

GROUP: 1646

	•			•	<u>6</u> )_
•		_	•	2007	जा

# U.S. PATENT DOCUMENTS

EXAM.	A SS	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
- Day	A88	2003/0003529	1/2/03	Bayer			
	A89	2003/0044423	3/6/03	Gillies et al.			Δ.
	A90	2003/0049227	3/13/03	Gillies et al.			TCA.
	A91	2003/0105294	6/5/03	Gillies et al.			MAD VA
	A92	2003/0012789	1/6/03	Blumberg et al.			"12, 1
	A93	2003/0157054	8/21/03	Gillies et al.			<00 <sub>4</sub>
	A94	2003/0166163	9/4/03	Gillies			
<u> </u>	A95	2003/0166877	9/4/03	Gillies et al.			

# FOREIGN PATENT DOCUMENTS

EXAM INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B88	0 640 619 A1	3/1/95	EP					Y
···	B89	0 668 353 A1	8/23/95	EP				,	Y
<u></u>	B90	1 088 888 A1	4/4/01	EP					Y
	B91	WO 94/24160	10/27/94	PCT					Y
	B92	WO 94/25055	11/10/94	PCT					Y
	B93	WO 97/43316	11/20/97	PCT					Y
-	B94	WO 99/66054	12/23/99	PCT					Y
	B95	WO 00/24893	5/4/00	PCT					
	B96	WO 00/68376	11/16/00	PCT	_				Y
	B97	WO 01/36489	5/25/01	PCT					Y
	B98	WO 01/58957	8/16/01	PCT					
	B99	WO 02/02143	1/10/02	PCT					-
	B100	WO 02/066514	8/29/02	PCT					Y
	B101	WO 02/072605	9/19/02	PCT					
c	B102	WO 02/079232	10/10/02	PCT					
<del></del>	B103	WO 02/079415	10/10/02	PCT					
	B104	WO 02/090566	11/14/02	PCT					
EXAMI	NER	<u> </u>			DATE CO	ONSIDERE	ED	•	

SECOND SUPPLEMENTAL IN ORM DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: LEX-002C1

APPLICANT(S): Gillies et al.

SERIAL NO.: 10/005,212

#### RECEIVED MAR 1 2 2004 **GROUP: 1646** FILING DATE: December 4, 2001 U.S. PATENT DOCUMENTS SUB FILING DATE IF **CLASS** DATE NAME EXAM. DOCUMENT APPROPRIATE **CLASS** INIT. NUMBER PCT 6/12/03 B105 WO 03/048334 \ Y PCT WO 03/077834 9/25/03 B106 OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication) EXAM. INIT. Angal et al., (1993), "A Single Amino Acid Substitution Abolishes the Heterogeneity of Chimeric C170 Mouse/Human (IgG4) Antibody," Molecular Immunology, 30(1):105-108. Batra et al., (1993), "Insertion of Constant Region Domains of Human IgG1 into CD4-PE40 Increases Its C171 Plasma Half-Life," Mol. Immunol., 30(4):379-386. Becker et al., (1996), "Long-lived and Transferable Tumor Immunity in Mice after Targeted Interleukin-2 C172 Therapy," J Clin Invest., 98(12):2801-2804. Becker et al., (1996), "T Cell-mediated Eradication of Murine Metastatic Melanoma Induced by Targeted C173 Interleukin-2 Therapy," J Exp. Med., 183(50):2361-6. Bitonti et al., (2002), "Transepithelial Absorption of an Erythropoietin-Fc Fusion Protein After Delivery to the C174 Central Airways," Respiratory Drug Delivery, 8:309-312. Boissel et al., (1993), "Erythropoietin Structure-Function Relationships: Mutant Proteins that Test a Model of C175 Tertiary Structure," The Journal of Biological Chemistry, 268(21):15983-15993. Briggs et al., (1974), "Hepatic Clearance of Intact and desialylated Erythropoietin," American Journal of C176 Physiology, 227(6):1385-1388. Chuang et al., (1994), "Alteration of Lymphocyte Microtubule Assembly, Cytotoxicity, and Activation by the C177 Anticancer Drug Taxol," Cancer Research, 54:1286-1291. Cruse et al., (1995), Illustrated Dictionary of Immunology, CRC Press, NY, p.156-7. C178 Darling et al., (2002), "Glycosylation of Erythropoietin Affects Receptor Binding Kinetics: Role of C179 Electrostatic Interactions," Biochemistry, 41:14524-14531. Davis et al., (2003), "Immunocytokines: Amplification of Anti-cancer Immunity," Cancer Immunol. C180 Immunother., 52:297-308. Dolman et al., (1998), "Suppression of Human Prostate Carcinoma Metastases in Severe Combined C181 Immunodeficient Mice by Interleukin 2 Immunocytokine Therapy," Clin Cancer Res., 4(10):2551-7. Duncan et al., (1988), "The Binding Site for C1q on IgG," Nature, 332:738-740. Egrie et al., (2001), "Development and Characterization of Novel Erythropoiesis Stimulating Protein (NESP)," C183 Nephrol. Dial. Transplant., 16:3-13. Elliott et al., (1997), "Mapping of the Active Site of Recombinant Human Erythropoietin," Blood, 89(2):493-C184 502. Fibi et al., (1995), "N- and O-Glycosylation Muteins of Recombinant Human Erythropoietin Secreted From BHK-21 Cells," Blood, 85(5):1229-1236. **EXAMINER** DATE CONSIDERED

SECOND SUPPLEMENTAL IN CRIMATION DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: LEX-002C1

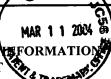
APPLICANT(S): Gillies et al.

SERIAL NO.: 10/005,212

FILING DATE: December 4, 2001

GROUP: 1646200

	· · · · · ·			FILING DATE:	December 4	, 2001	GROUP: 1040				
			U.S. PATEN	T DOCUMENTS	<del></del>						
EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE				
	C186	Frost et al., (1997), "A Phase I/IB Trial of Murine Monoclonal Anti GD2 Antibody 14.G2a Plus Interleu in Children with Refractory Neutroblastoma," Cancer, 80:317-33.									
	C187	Gan et al., (1999), "Spo Fusion Proteins," Clin.			ys for Quanti	tation of Ar	ntibody-cytokine				
	C188	Gillies et al., (1991), "I Chimeric Anti-ganglio				es of Lymph	notoxin and a				
	C189	Gillies et al., (2002), "Treatment of Cancer,"				y and Antil	oody-targeted				
	C190	Gillies et al., (2002), "Immunocytokine Base									
	C191		(1975), Neuronal Properties of Hybrid Neuroblastoma X Sympathetic Ganglion Cells," <u>Proc. i. USA</u> , 72(12):4923-4927.  t al. (1996), "In Vitro Bioassay for Human Erythropoietin based on Proliferative Stimulation Cell Line and Analysis of Carbohydrate-dependent Microheterogeneity," <u>Journal of al and Biomedical Analysis</u> , 14:1455-1469.								
	C192	an Erythroid Cell Line									
	C193	C193 Hank et al., (1996), "Activation of Human Effector Cells by a Tumor Reactive Recombinant Anti-gang GD2 Interleukin-2 Fusion Protein (ch14.18-IL2)," Clin Cancer Res., 2(12):1951-9.									
	C194		Hank et al., (2003), "Determination of peak serum levels and immune response to the humanized antiganglioside antibody-interleukin-2 immunocytokine," Methods Mol. Med., 85:123-31.								
	C195	Haraguchi, (1994), "Is Cdna using anti-GD2									
	C196		ocessing of C-terminal Lysine and Arginine Residues of Proteins Isolated from Mammhromatogr. A., 705:129-134.								
	C197	Harvill et al., (1995), 'Activity and Shows E									
	C198	Hezareh et al, (2001), against Human Immur				Broadly No	eutralizing Antibody				
	C199	Idusogie et al., (2000) IgG1 Fc," <u>J. Immunol</u>			ıxan, a Chim	eric Antibo	dy with a Human				
	C200	Imboden et al., (2001) Antitumor Effector M	•	•			-				
	C201	Kato et al., (1997), "M Pharmacology and Ex			tics of Erythi	opoietin in	Rats," The Journal of				
	C202	Kato et al., (1998), "P <u>Disposition</u> , 26:126-1		Erythopoietin in Genet	ically Anemi	c Mice," <u>Dr</u>	ug Metabolism and				
EXAMI	NER			DATE CONSID	ERED						



ODM I	PTO - 1	449	<del>/                                    </del>	S.	Δ	ATTORNEY DOC	KET NO ·	LEX-00	Sheet 5 of 7	
			MA HSFO	R 1 1 2024 B		APPLICANT(S): (			Sheet 5 of 7  2C1  MAR  2  GROUP: 1646	
DISCLO	OSURE	PLEMENTAL STATEMENT	L KES	THADENLY ST	s	SERIAL NO.: 10/0	05,212		MARIO	
						FILING DATE: D		. 2001	GROUP: 1646	
<del></del>				U.S. PATE		DOCUMENTS				
EXAM.		DOCUMENT		DATE		NAME	CLASS	SUB	FILING DATE IF	
NIT.		NUMBER						CLASS	APPROPRIATE	
	C203					aracterization of a Ur etin," <u>Journal of Cell</u>				
	C204			"Phase II Trial of n. Oncol., 19:4189		nti-GD2 Monoclonal	-macropha	ge-colony-s	stimulating Factor for	
<u> </u>	C205	Locatelli et al.,	(2001),	"Darbepoetin alfa	Amg	en," Current Opinior	in Investi	gational Dr	ugs, 2:1097-1104.	
	C206 Lode et al., (2000), "What to do with Targ					IL-2," Drugs Today,	36(5):321	·36.		
	C207			elanoma Immunot on," <u>J. Clin. Inves</u>			epends on (	CD4(+) T-0	cell Help Mediated by	
	C208			Optimizing the Userol. Dial. Transpla			Pharmac	okinetic an	d Pharmacodynamic	
	C209	Protein Facilita	tes Neu /CD18)	trophil Antibody-o	depen	e/granulocyte Macro dent Cellular Cytoto: Cell Adhesion and A	xicity and I	Depends on	FcyRII (CD32) and	
	C210	Mueller et al. (Constant Regio 34(6):441-452.	1997), " ns Bloc	Humanized Porcii k Human Leukocy	ne VC yte Bir	CAM-specific Monoc nding to Porcine End	lonal Antib lothelial Ce	odies with lls," <u>Molec</u>	Chimeric IgG2/G4 cular Immunology,	
	C211					anges in Fibrosarcoma-induced Immune Cell Function: Modulation  1. Immunother, 45:20-28.				
	C212	1	-		-	Cytotoxicity Mediated by a Recombinant Antibody-IL2 Fusion Immunology Letters, 39(1):91-9.				
	C213	`	• • • • • • • • • • • • • • • • • • • •			omas Express Increas otherapy," <u>Cancer Im</u>				
	C214	Ngo et al., (199 Birkhauser Bos		e Protein Folding	Proble	em and Tertiary Stru	cture Predic	ction," pp.	433-440 and 492-495	
	C215					cine against Human C cinoma in CEA Tran			igen (CEA) Prevents <u>e,</u> 20:421-9.	
	C216	Niethammer et al., (2001) "Targeted Interleukin 2 Therapy Enhances Protective Immunity Induced by an Autologous Murine Melanoma," Cancer Res., 61(16):6178-84.								
	C217		,	ructures of Sialyla Cells," <u>Eur. J. Bio</u>		ligosaccharides of Honor, 213:39-56.	uman Eryth	ropoietin E	Expressed in	
	C218					shed Hepatic Human pody-targeted Interlet				
	INER	<u> </u>				DATE CONSIDE	RED			

ORM P	TO - 1	449	MAR 1 1 2004 8	ATTORNEY DOCKET NO.: LEX-002C1								
ECOND	SUPI	PLEMENTAL INR	RMATION &	APPLICANT(	S): Gillies et a	al.	GROUP: 1648P					
ISCLO:	SUKE	PLEMENTAL INF STATEMENT	TA MADEMARY. CO.	SERIAL NO.:	10/005,212							
				FILING DAT	E: December 4	, 2001	GROUP: 1646/7					
			U.S. PATEN	IT DOCUMEN	ΓS		•					
XAM. NIT.		DOCUMENT NUMBER	DATE	NAME CLASS SUB FILING DATE IF CLASS APPROPRIATE								
	C219	Park et al., (2000), "Efficiency of Promoter and Cell line in High-level Expression of Erythropoietin," <u>Biotechnol. Appl. Biochem.</u> , 32:167-172.										
	C220	Reisfeld et al., (1996) <u>Lab Anal.</u> , 10(3):160-		in 2 Fusion Proteir	s: A New Appro	each to Can	cer Therapy," <u>J Clin</u>					
	C221	Melanoma Metastase. 56(8):1707-12.										
	C222	Fusion Protein to Ssu 61(23):8498-503.	Sabzevari et al., (1994), "A Recombinant Antibody-interleukin 2 Fusion Protein Suppresses Growth of Hepatic Human Severe Combined Immunodeficiency Mice," <u>Proc. Natl. Acad. Sci. USA</u> , 91(20):9626-30.									
	C223	Human Severe Comb										
	C224	Seidenfeld et al., (2001), "Epoietin Treatment of Anemia Associated with Cancer Therapy: A Systematic Review and Meta-analyis of controlled Clinical Trials," <u>Journal of National Cancer Institute</u> , 93:1204-1214.										
	C225	Shinkawa et al., (2003), "The Absence of Fucose but Not the Presence of Galactose or Bisecting N-Acetylglucosamine of Human IgG1 Complex-type Oligosaccharides Shows the Critical Role of Enhancing Antibody-dependent Cellular Cytotooxicity," J. Biol. Chem., 278:3466-3473.										
	C226	Spiekermann et al., (Adult Life: Function										
	C227	Strom et al., (1996), Science, Chapter 36,		ch to Organ Transp	lantation," <u>Thera</u>	peutic Imn	nunology, Blackwell					
	C228	Syed et al., (1998), ". Orientation," <u>Nature</u> ,		ng through Cytokin	e Receptors Dep	ends Critic	ally on Receptor					
<del>-</del> 11 - 1 - 1 - 1	C229	Thommesen et al., (2 Complement Activat			H2 Domain is C	rucial for A	Antibody Dependent					
	C230	Wells, (1990), "Addi	tivity of Mutational F	Effect in Proteins,"	Biochemistry, 29	9(37):8509	-8517.					
	C231		Wen et al., (1993), "Erythropoietin Structure-Function Relationships: High Degree of Sequence Homology Among Mammals," <u>Blood</u> , 82(5):1507-1516.									
	C232			ersistent Tumor-protective Immunity in Mice Cured of Established Colon search, 58(17)3918-3925.								
	C233	Xiang et al., (1999) ' Immunol., 163(7):36	T Cell Memory against Colon Carcinoma is Long-lived in the Absence of Antigen," <u>J.</u> 76-83.									
	C234	Trimer induces T Ce	"A Dual Function Di Il-mediated Protectiv Immunol., 167(8):45	e Immunity Agains			gen and CD40 Ligand mbryonic Antigen-					
EXAMO	NER			DATE CON	SIDERED							

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

ATTORNEY DOCKET NO.: LEX-002CI ARTOS): Gillies et al.

FILING DATE: December 4, 2001

GROUP: 1646

### LLS PATENT DOCUMENTS

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE,			
	C235	Xiang et al., (2001), "P Oral DNA Vaccine in (					EA) Induced by an			
	C236	C236 Xu et al., (1994), "Residue at Position 331 in the IgG1 and IgG4 CH2 Domains Contributes to Their Differential Ability to Bind and Activate Complement," J. Biol. Chem., 269(5):3469-3474.								
	C237	Yu et al., (1998), "Phase I Trial of a Human-Mouse Chimeric Anti-Disaloganglioside Monoclonal Antibody ch14.18 in Patients with Refractory Neuroblastoma and Osteosarcoma," J. Clin. Oncol., 16(6):2169-80.								
<del>"</del>	C238	Zagozdzon et al. (1999 Melanoma Model In V					Paclitaxel in Murine			
EXAMI	NER			DATE CON	SIDERED		-			

3030303\_1